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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,630	03/24/2004	Dwayne M. Benson	H0005313--1180	6094
128	7590	09/18/2006	EXAMINER	
HONEYWELL INTERNATIONAL INC.			TRINH, SONNY	
101 COLUMBIA ROAD			ART UNIT	
P O BOX 2245			PAPER NUMBER	
MORRISTOWN, NJ 07962-2245			2618	

DATE MAILED: 09/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/808,630

**Applicant(s)**

BENSON ET AL.

**Examiner**

Sonny TRINH

**Art Unit**

2618

**– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-60 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-33, 35-57, 59 and 60 is/are rejected.
- 7) ☒ Claim(s) 11, 34 and 58 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Specification*

1. **Claim 59** is objected to because of the following informalities:

Claim 59 is a method claim which should not depend on an apparatus claim.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1-6, 8-10, 12-14, 17, 24-29, 31-33, 36-38, 40, 47, 49-53, 55-57** are rejected under 35 U.S.C. 102(e) as being anticipated by Younis et al. (hereinafter "Younis"; Patent Application Publication Number 2004/0063585 A1).

Regarding **claim 1**, with reference to figure 1 and description in column 2, Younis discloses a wireless sensor communication module (module 100 of figure 1, column 2) for operating in an ad-hoc sensor network having a plurality of nodes (figure 1, clusters 10, 20, 30), the module comprising: a controller configured to receive power capability

data representative of power capability of other wireless sensor communication modules in the sensor network and operable, in response thereto, to (i) determine a data transmission route through the sensor network based at least in part on the power capability data (paragraphs [0031] – [0033]) and (ii) supply transmission route data representative thereof; and a transceiver configured to receive sensor data and operable to modulate the sensor data with a radio frequency (RF) signal to thereby generate RF modulated sensor data, the transceiver additionally coupled to receive the transmission route data and operable, in response thereto, to transmit the RF modulated sensor data to a sensor network node in the determined transmission route (paragraphs [0012] – [0013], [0031] – [0033]).

Regarding **claim 2**, Younis further discloses that the sensor network node in the determined transmission route is one of the other wireless sensor communication modules in the sensor network (see figure 1 and description).

Regarding **claim 3**, Younis further discloses that the transceiver is further configured to receive RF modulated sensor data from one or more of the other sensor communications modules in the sensor network and is operable, in response thereto, to retransmit the received RF modulated sensor data (paragraph [0031]).

Regarding **claim 4**, Younis further discloses that the transceiver retransmits the received RF modulated sensor data to a sensor network node in a transmission route determined by one of the other sensor communications modules (paragraphs [0026], [0031], [0038], [0072], [0073], [0076], [0077]).

Regarding **claim 5**, Younis further discloses that: the controller is further coupled to receive position data representative of a position of one or more of the other communications modules in the sensor network; and the controller is further operable to determine the data transmission route through the sensor network based at least in part on the power capability data and the position data (figure 4, see paragraphs [0031] – [0032]).

Regarding **claim 6**, Younis further discloses that the transceiver is configured to receive RF modulated position data from one or more of the other communications modules in the sensor network and operable to demodulate the position data therefrom; and the controller is coupled to receive the demodulated position data from the transceiver data (figure 4, see paragraphs [0031] – [0032]). Please note that the modulation and demodulation steps are inherent in the wireless transmission system).

Regarding **claim 8**, Younis further discloses that the controller is further operable to supply identification data that uniquely identifies the module; and the transceiver is coupled to receive the identification data and is further operable to (i) RF modulate the identification data and (ii) transmit the RF modulated identification data (paragraphs [0074] – [0075]).

Regarding **claim 9**, Younis further discloses that the module is configured to be a member of multiple sensor networks (figure 1, sensor 100's); and the identification data further identifies the sensor network of which the module is a member (paragraphs [0074] – [0075]).

Regarding **claim 10**, since Younis discloses that the system can determine the geographic location of each sensor (figure 4) it is inherent that the transceiver is configured to receive RF modulated identification data from one or more of the other communications modules in the sensor network and operable to demodulate the identification data therefrom; and the controller is coupled to receive the demodulated identification data from the transceiver and operable, in response thereto, to determine if the other communication modules are members of the sensor network.

Regarding **claim 12**, since Younis discloses that the system can determine the geographic location of each sensor by their Ids (paragraphs [0074] – [0075]). It is inherent that the controller is further coupled to receive identification data representative of a unique identifier associated with one or more of the other communications modules in the sensor network and operable, in response thereto, to determine whether the one or more other communication modules are members of the sensor network.

Regarding **claim 13**, since Younis discloses that the sensors receive commands from and send readings to its gateway node (paragraphs [0029]), it is inherent that the controller is configured to couple to a sensor and receive a sensor signal therefrom; and further operable to supply the sensor data to the transceiver.

Regarding **claim 14**, Younis further discloses that the controller is further operable to issue a transmission command in accordance with a predetermined schedule; and the transceiver is coupled to receive the transmission command and operable, upon receipt thereof, to transmit the RF modulated sensor data to the sensor network node in the determined transmission route (paragraph [0035]).

Regarding **claim 17**, Younis further discloses that the module further comprising:  
a power supply coupled to the transceiver and the controller and operable to supply power thereto ("battery"; paragraphs [0007], [0010], [0058] – [0059]).

Regarding claims **24-29, 31-33, 36-38, 40**, these claims are interpreted and rejected for the same reasons as given in claims **1-6, 8-10, 12-14, 17** respectively.

Regarding **claim 47**, this claim merely reflects the communication network as opposed to the apparatus claim of claim 1 and is therefore rejected for the same reasons.

Regarding **claims 49-53, 55-57** these claims merely reflect the method claims as opposed to the apparatus claim of claims 1, 3-6, 8-10 respectively and are rejected for the same reasons.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 7, 15, 20-21, 23, 30, 38, 43-44, 46, 48, 54, 60** are rejected under 35 U.S.C. 103(a) as being unpatentable over Younis.

Regarding **claim 7**, Younis discloses the invention but does not disclose that the controller is further operable to supply position data representative of its position in the sensor network.

However, address code for identifying the location of the sensors are well known and would have been obvious to a person of ordinary skill in the art. The motivation for wanting to find out the location of the sensor is for its association with the collected data for maintenance purposes.

Regarding **claim 15**, Younis discloses the invention but does not explicitly disclose that the predetermined schedule includes a predetermined access time; and the controller is further operable to issue a predetermined number of transmission commands during the predetermined access time. However, since Younis already disclose the schedule of operation (paragraph [0035]), it is therefore obvious and well within the level of a person of ordinary skill in the art to issue a predetermined number of transmission commands during the predetermined access time for routine verification and maintenance reasons.

Regarding **claim 20**, Younis discloses the invention but does not disclose that the power supply comprises a thermoelectric generator. However, thermoelectric generator are notoriously well known and the Examiner takes Official notice of such use. The motivation for using thermoelectric generator is to take advantage of the heat in the environment where the sensors are located to convert it to electrical energy for supplying the sensors.

Regarding **claim 21**, Younis discloses the invention but does not disclose that the sensor network node includes an aircraft engine controller. However, since the sensors are used to sense data remotely as disclosed by Younis (please see summary of the invention), it would have been obvious and well within the level of a person of



ordinary skill in the art to install the sensors anywhere where data are desired and at places that are hard to reach.

Regarding **claim 23**, Younis discloses the invention but does not disclose that the transceiver is configured to implement at least Frequency Hopping Spread Spectrum (FHSS) radio transmission. However, Frequency Hopping Spread Spectrum (FHSS) is a well known modulation scheme, which is resistant to jamming or interference and would have been obvious and well within the level of a person of ordinary skill in the art to take advantage of the FHSS modulation scheme for its resistant to jamming and interference.

Regarding claims **30, 38, 43-44, 46**, these claims are interpreted and rejected for the same reasons as given in claims **7, 15, 20-21, 23** respectively.

Regarding **claim 48**, this claim merely reflects the communication network as opposed to the apparatus claim of claim 21 and is therefore rejected for the same reasons.

Regarding **claim 54**, this claim merely reflects the method claims as opposed to the apparatus claim of claim 7, and is rejected for the same reasons.

Regarding **claim 60**, this claim merely reflect the method claims as opposed to the apparatus claim of claim 21, and is rejected for the same reasons.

4. **Claims 18-19, 41-42** are rejected under 35 U.S.C. 103(a) as being unpatentable over Younis in view of Yamashita et al. (hereinafter "Yamashita"; U.S. Patent Number 6,950,767 B2).

Regarding **claims 18-19**, Younis discloses the invention but does not disclose that the power supply comprises an energy converter configured to convert mechanical energy to electrical energy or includes at least a micro electro mechanical generator.

In an analogous art, Yamashita teaches a monitoring system utilizing sensors (abstract). Yamashita further teaches that the sensors can be supplied with power generated from electromechanical generators (column 24 line 47 to column 25 line 23).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to incorporate the electro-mechanical energy generator to the sensors, as taught by Yamashita, to the system of Younis. The motivation for doing so would be to minimize the maintenance cost by not replacing the batteries of the sensors.

Regarding **claims 41-42**, these claims are interpreted and rejected for the same reasons as given in **claims 18-19** respectively

5. **Claims 22, 45** are rejected under 35 U.S.C. 103(a) as being unpatentable over Younis in view of Ghyselen et al. (hereinafter "Ghyselen"; U.S. Patent Number 7,071,029 B2).

Regarding **claims 22 and 45**, Younis discloses the invention but does not disclose that the wireless sensor communication module is formed as a single integrated circuit using silicon on insulator (SOI) technology.

In an analogous art, Ghyselen teaches the methods for fabricating final substrate (abstract). Ghyselen further teaches that silicon on insulator (SOI) technology can be used to manufacture sensors (column 1 lines 15-20 and example 3).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to use the SOI technology, as taught by Shyselen, to produce the sensor. The motivation for using SOI technology is for its simplicity in design and much less expensive than conventional technology.

***Allowable Subject Matter***

6. **Claims 11, 16, 34, 39, 58** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding **claims 11, 34, 58** the applied references fail to disclose or render obvious the claimed limitations, specifically wherein the transceiver is further configured to receive RF modulated sensor data from one or more of the other sensor communications modules in the sensor network; the controller is further responsive to the demodulated identification data to issue a retransmission command if it determines that the received RF modulated sensor data was transmitted from a communication module that is a member of the sensor network; and the transceiver is further coupled to receive the retransmission command and operable, upon receipt thereof, to retransmit the received RF modulated sensor data.

Regarding **claims 16, 39**, the applied references fail to disclose or render obvious the claimed limitations, specifically wherein the transceiver is further configured

to place the module in a sleep mode if the transceiver fails to transmit the RF modulated sensor data after the predetermined number of transmission commands are issued.

### CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sonny TRINH whose telephone number is 571-272-7927. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward URBAN can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

9/6/06

  
SONNY TRINH  
PRIMARY EXAMINER